

Application No.: 10/603,924

Docket No.: JCLA7109

**In The Claims:**

Claim 1 (currently amended) A method of removing contaminants from a silicon wafer after a chemical-mechanical polishing operation, comprising:

providing a silicon wafer having a layer thereon;

performing a chemical-mechanical polishing process to remove a portion of the wafer; and

treating the silicon wafer ~~with a buffer polishing process~~ using an aqueous solution of ozone and proving an inertial mechanical force.

Claim 2. (original) The method of claim 1, wherein a concenuration of ozone in the aqueous solution is between 10 ppm and 200 ppm.

**Claim 3. (cancelled)**

Claim 4 (original) The method of claim 1, wherein the step of treating the silicon wafer is performed by a water- cleaning process.

Claim 5 (original) The method of claim 1, wherein the layer is selected from the group consisting of a low dielectric constant material laver, a metallic laver and n barrier layer.

Claim 6 (original) The method of claim 1, wherein the aqueous ozone solution is catalyzed to produce more free ozone radicals therein.

Claim 7 (original) The method of claim 6, wherein the aqueous ozone solution is catalyzed by exposure to a beam of ultraviolet light or addition of hydrogen peroxide thereto.

**Claims 8-30 ( cancelled)**

Application No.: 10/603,924

Docket No.: JCLA7109

Claim ~~21~~31 (currently amended) A method of forming a damascene structure, comprising:

providing a substrate;  
forming a dielectric layer over the substrate;  
patterning the dielectric layer to form an opening that exposes a portion of the substrate;  
forming a metallic layer over the substrate so that the opening is completely filled;  
performing chemical-mechanical polishing to remove a portion of the metallic layer;  
and

treating the substrate using an aqueous solution of ozone and providing an inertial mechanical force so that contaminants on a surface of the substrate are removed.

Claim ~~22~~32 (currently amended) The method of claim-~~21~~ 31, wherein a concentration of ozone in the aqueous solution is between about 10 ppm and 200 ppm.

Claim ~~23~~33 (currently amended) The method of claim-~~21~~ 31, wherein ~~the step of treating the substrate is performed by conducting a buffer polishing process~~ the inertial mechanical force is proved by a polishing pad in a buffer CMP station.

Claim ~~24~~34 (currently amended) The method of claim-~~21~~ 31, wherein ~~the step of treating the substrate is performed by a water cleaning process~~ the inertial mechanical force is proved by a polishing pad in a cleaning station.

Claim ~~25~~35 (currently amended) The method of claim-~~21~~ 31, wherein the inertial mechanical force is between about 0.5 psi and 3 psi.

Claim ~~26~~ 36 (currently amended) The method of claim ~~21~~ 31, further includes:  
forming a barrier layer over the substrate, wherein the barrier layer is conformal to the surface profile of the substrate and covers the dielectric layer before forming a metallic layer

**Application No.: 10/603,924**

**Docket No.: JCLA7109**

process but after patterning the dielectric layer process; and

performing barrier layer chemical-mechanical polishing to remove a portion of the barrier layer and expose the dielectric layer after performing chemical-mechanical polishing process.

Claim 37 (new) The method of claim 31, wherein the inertial mechanical force is proved by a polishing pad in a metal CMP station.

Claim 38 (new) The method of claim 1, wherein the inertial mechanical force is proved by a polishing pad in a buffer CMP station.

Claim 39 (new) The method of claim 1, wherein the inertial mechanical force is proved by a polishing pad in a cleaning station.

Claim 40 (new) The method of claim 1, wherein the inertial mechanical force is proved by a polishing pad in a metal CMP station.

Claim 41 (new) The method of claim 1, wherein the inertial mechanical force is between about 0.5 psi and 3 psi.